ABSTRACT

[0100] An optical switching system that switches the path of an optical signal by moving a microstructure onto which a light-guiding structure is mounted. The microstructure is formed by a MEMs and semiconductor process to be integral to the substrate. The light-guiding structure may include waveguides. The microstructure moves from one position to another position (e.g., laterally, vertically, rotationally) such that incoming optical signals align over a small air gap to different optical paths, depending on the position of the movable microstructure. As a result, the optical signal propagate along different optical paths (e.g., straight pass through or cross over) depending on the position of the movable microstructure. The optical paths have a large radii of curvature so as to change the direction of the optical signal gradually, thereby reducing insertion losses. By combining optical switches in both the vertical and horizontal directions, the resulting optical switching system handles switching in three dimensions.